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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/617,975
Filing Date: July 12, 2003
Appellant(s): PAYNE ET AL.

Sean O'Connell
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/28/2007 appealing from the Office action mailed 11/19/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|-----------|--------------|---------|
| 5,883,015 | Hesse et al. | 10-1998 |
| 6,308,787 | Alft | 10-2001 |

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5,746,278

Bischel et al.

5,746,278

(9) Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hesse et al. # 5,833,015 in view of Alft # 6,308,787 B1.

Hesse et al., discloses a method for drilling and backreaming a horizontal bore hole, the method comprising:

Automatically rotating and pulling a drill string (3), having a backreamer (5) through the horizontal borehole.

Automatically reducing a rate of pullback if a rotation pressure on the drill string is greater than a predetermined limit.

Automatically reducing the rate of pullback if a rotation speed of the drill string is less than a predetermined limit.

Increasing the rate of pullback if the rotation pressure is less than the predetermined limit, increasing the rotation speed of the drill string is greater than a predetermined limit, and the product tension at the backreamer (24) is less than a predetermined limit.

Attaching a utility line(8) to the backreamer, after the boring tool (26) has exited the earth at location (24). See Hesse et al. Col. 3, ln. 50-col. 5, ln. 23.

What Hesse et al. does not disclose is automatically reducing the length of the drill string. However, Alft teaches a method of operating a horizontal boring machine having an automated drill string (22), which can be lengthened or shortened, by adding or removing a pipe section from the drill string, either automatically or manually. Alft explicitly recites "A pipe loading controller (141) may be employed to control an automatic rod loader apparatus during rod threading and unthreading operations". See Col. 30, lns. 30-33. Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to provide the method of forming a bore hole, of Hesse et al., with the method of automatically lengthening or shortening the drill string, as taught by Alft et al., in order to maximize boring efficiency. See Alft col. 30, lines 19-65.

In regards to claim 6, Hesse et al. discloses it is desirable to pull a utility line through a borehole, by attaching the utility line (8) to a drill head (5), and to transmit operational data from the bore head to the drilling machine to maximize boring efficiency. What Hesse et al. does not disclose is recording the actual location of the utility line as the utility line is automatically pulled through the borehole via a transmission line disposed within the drill string.

However, Alft discloses it is known to track the position of a drill head (24) in real time, using a sonde-type transmitter and remote control unit that uses a traditional methodology for locating the drill head. Alft explicitly recites "The portable control unit may also embody the 'drill head locating receiver' and/or radio that transmits data to the boring machine receiver/display". Alft further recites "A control system...provides for the acquisition and processing of boring tool location, orientation...in real time...the use of repeaters may significantly reduce delays associated with acquiring and processing information concerning the position and activity of the boring tool (24)".

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to provide the method of backreaming a borehole of Hesse et al. with the method of tracking the drill head, as taught by Alft, in order to continuously determine and record the location of the utility line, connected to the drill head. See col. 12, lns.16-20, col. 16, lns. 16-41.

Claims 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hesse et al. # 5,833,015 in view of Alft # 6,308,787 B1, as put forth with respect to claim 4 above, and further in view of Bischel et al. # 5,746,278.

With respect to claims 7, 8 Alft teaches:

"Depending on a given application, it may also be desirable or required to acquire 44 environmental data concerning the boring tool 24 in real-time, such as boring tool temperature and stress/pressure, for example". See Col. 18, lns. 27-50

With specific regard to claims 9-11, although neither Hesse et al., nor Alft explicitly recite reducing the rate of pullback of the drill string by a certain percentage; both Hesse et al., and Alft do disclose that the rate of pull-back can be reduced or terminated based upon whether the rotation speed, rotation pressure(torque) of the drill string, or the product tension (lubricating mud pressure) is above or below a pre-determined level. Further, Bischel et al., which is incorporated by reference in its entirety by Alft; explicitly recites "When the controller detects a rise in rotation pump pressure above an unacceptable level, the controller disengages the boring tool by reducing the rate of boring tool displacement along the underground path, while maintaining rotation of the boring tool at a pre-selected rate. Such disengagement reduces the load on the rotation pump and allows the pressures to recover to an acceptable level. The controller re-engages the boring tool after detecting that the rotation pump pressure has fallen below a set level". See Bischel et al., Abstract; Col. 2, Ins. 13-39; Col. 4, ln. 21-col. 6, ln. 56. Therefore, it would have been obvious to one of ordinary skill in the art, to provide the method of backreaming a horizontal borehole, of Hesse et al., in view of Alft, with the steps of providing a controller, that can automatically increase and decrease the displacement rate of the boring tool, based on pre-set operating parameters, as taught by Bischel et al., in order to "maintain a substantially constant rotation rate which provides for optimized drilling efficiency"; as clearly stated by Bischel et al. See Col. 6, Ins. 53-56.

(10) Response to Argument

Appellant argues against the rejection of claims 4-6, 12 by stating "as noted by the Examiner, Hesse does not teach automatically reducing the length of the drill string, as required by...claim 4".

Appellant then suggests "Alft's mere desire to automatically reduce a length of drill string does not make it enabling for such purpose and cannot render Appellants' claims obvious". And cites Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc., 381 F.3d (Fed Cir. 2004).

Appellant further argues "Alft does not teach how to automatically reduce a length of drill string because it does not teach the sensor or control logic needed to process information from the sensors and activate the mechanical devices used to reduce a length of drill string".

However, the Examiner does not concur with Appellants' portrayal of the Alft reference.

Appellants' suggestion that Alft has a "mere desire, to automatically reduce a length of drill string" does not appear consistent with "A pipe loading controller (141) may be employed to control an automatic rod loader apparatus during rod threading and unthreading operations". See Col. 30, Ins. 30-33.

Since Alft clearly discloses "a pipe loading controller (141)" in communication with "an automatic rod loader apparatus" to thread and unthread the segments of drill string.

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Thereby automatically decreasing the length of the drill string by employing an automatic rod loader apparatus and a pipe loading controller (141).

Therefore, it appears as though one of skill in the art, would be enabled by Alft to operate a rod loading apparatus to thread and unthread the drill string segments, in order to lengthen and shorten the drill string, as is known in the art of horizontal drilling and backreaming.

Further, the Examiner does not concur with Appellants' suggestion the prior art must disclose "sensor(s) or control logic needed to process information".

It must be strongly noted nothing in the claims requires these features nor their use.

Therefore the rejection appears proper and is maintained.

Appellant's arguments with respect to Rozendall does not appear germane to the instant application, since Rozendall has not been cited nor referenced in the last office action.

Appellant states claims 5, 6, 12 stand and fall with claim 4, from which they depend.

The Examiner concurs.

Appellant argues against the rejection of claims 7-11 as unpatentable over Hesse in view of Alft and further in view of Bischel by suggesting "Claims 7-11 all depend directly or indirectly from claim 4 and they should be allowed when claim 4 is allowed...Each of these dependent claims includes the...features of claim 4".

However, the Examiner does not concur.

It should be noted Appellant makes no argument with respect to the limitations of claims 7-11 and never suggests the reference to Bischel does not teach the limitations of claims 7-11 as put forth by the Examiner in the last office action.

Thus, there should be no disagreement that Bischel teaches the limitations of claims 7-11 as well as motivates and enables one of skill in the art to provide a controller that can automatically increase and decrease the displacement rate of the boring tool, based on pre-set operating parameters, in order to maintain a substantially constant rotation rate which provides for optimized drilling efficiency. See Bischel et al. Col. 2, Ins. 13-39, Col. 4, Ins. 21-65; Col. 6, Ins. 53-56.

With respect to Appellants' argument that Bischel et al. does not teach "sensors or control logic needed to process information from the sensor to activate mechanical devices to reduce a length of drill string":

Nothing in the claims require sensors or control logic to activate mechanical devices to reduce a length of drill string".

The claims only require that the drill string length be reduced automatically, without regard as to how the "automatically" is performed.

Still further, as put forth above, Alft clearly teaches automatic pipe loading apparatus that can "automatically" thread and unthread drill string segments together, thereby automatically lengthening and shortening the drill string. See Alft, Col. 30, Ins. 30-33.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Raymond W. Addie/

Primary Examiner, Art Unit 3671

Conferees:

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